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Oliver

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[54] **SYSTEM AND METHOD FOR PROJECT MANAGEMENT AND ASSESSMENT**

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[51] **Int. Cl.**[6] **G06F 19/00**; G06G 7/64; G06G 7/66

[52] **U.S. Cl.** **364/468.05**; 364/468.06; 364/468.15; 364/551.01; 364/551.02; 705/3; 705/8

[58] **Field of Search** 364/578, 468.01, 364/468.02, 468.03, 468.05, 468.06, 468.08, 468.1, 468.15, 468.16, 468.18, 468.22, 468.24, 188, 551.01, 551.02; 395/650, 22, 24, 21, 20, 700, 140; 705/8, 9, 3; 345/134, 135, 136, 137, 140

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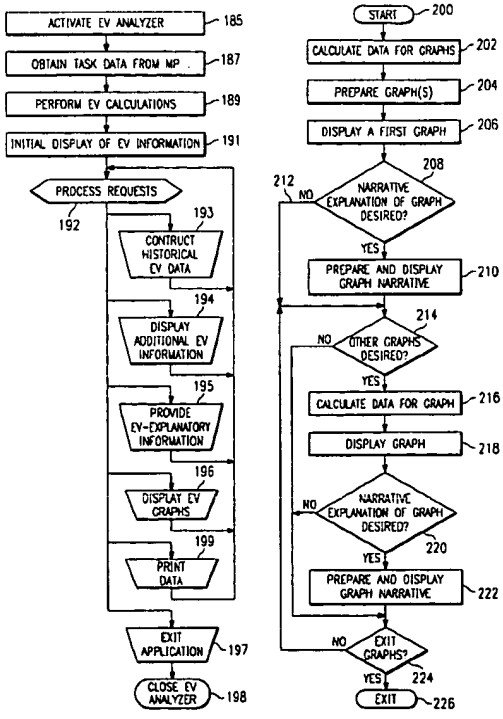
[57] **ABSTRACT**

A system **(100)** for monitoring and assessing the performance of a project includes a computer **(120)** and a software program associated with the computer **(120)**, with the software program and computer **(120)** operable in combination to receive project task data from a project management software file, determine current earned value (EV) information from the project task data, and graphically displaying the earned value information. A method for monitoring and assessing the performance of a project may be accomplished by entering task data for each task of the project in a project management software file; obtaining **(158)** the task data from the project management software file; calculating **(160)** a current earned value position; obtaining **(182)** historical earned value positions if any exists; and displaying **(162, 184)** the current earned value position and any historical earned value positions.

20 Claims, 3 Drawing Sheets



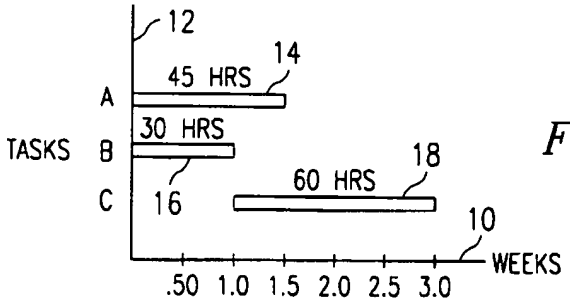


FIG. 1

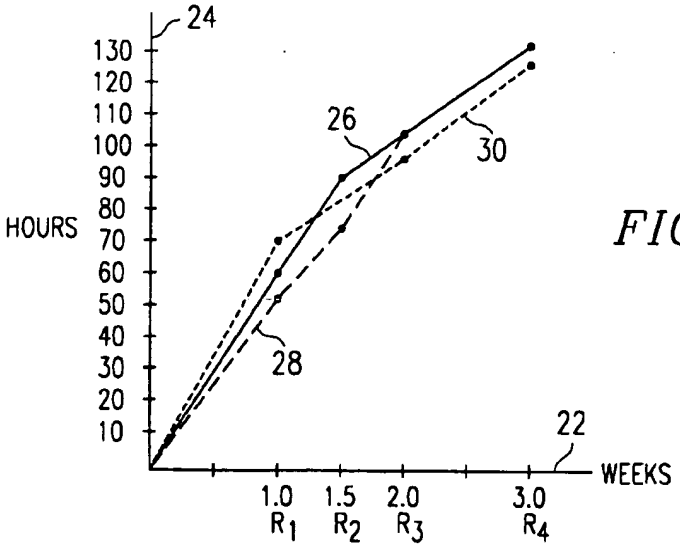


FIG. 2

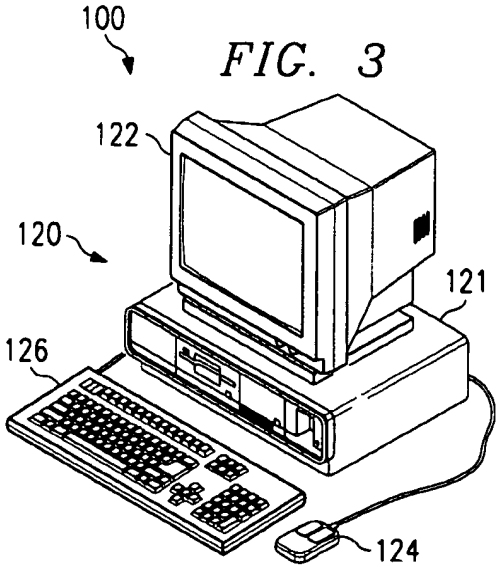


FIG. 3

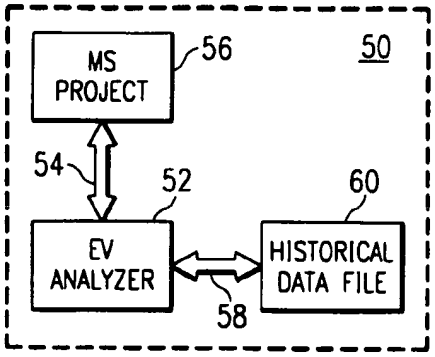


FIG. 4

FIG. 5a

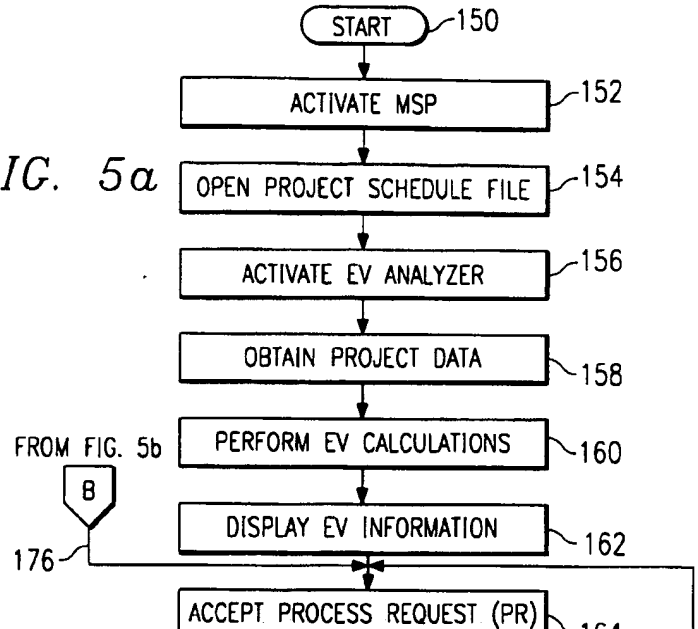

START
150
ACTIVATE MSP
152
OPEN PROJECT SCHEDULE FILE
154
ACTIVATE EV ANALYZER
156
OBTAIN PROJECT DATA
158
FROM FIG. 5b
B
PERFORM EV CALCULATIONS
160
176
DISPLAY EV INFORMATION
162
ACCEPT PROCESS REQUEST (PR)
164
OTHER EV CALCULATED INFORMATION REQUESTED ?
166
YES
168
NO
A
TO FIG. 5b
PREPARE AND DISPLAY ADDITIONAL EV INFORMATION
170

FIG. 5b

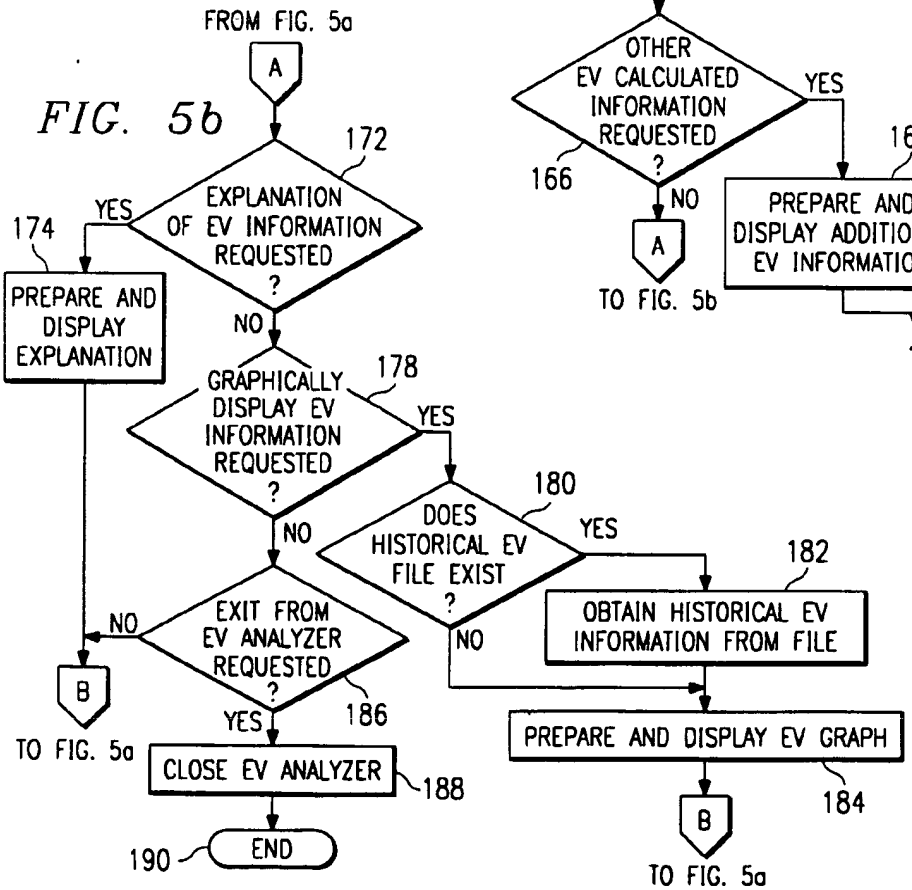

FROM FIG. 5a
A
172
EXPLANATION OF EV INFORMATION REQUESTED ?
YES
174
PREPARE AND DISPLAY EXPLANATION
NO
178
GRAPHICALLY DISPLAY EV INFORMATION REQUESTED ?
YES
180
DOES HISTORICAL EV FILE EXIST ?
YES
182
OBTAIN HISTORICAL EV INFORMATION FROM FILE
NO
NO
EXIT FROM EV ANALYZER REQUESTED ?
186
B
TO FIG. 5a
YES
CLOSE EV ANALYZER
188
END
190
PREPARE AND DISPLAY EV GRAPH
184
B
TO FIG. 5a

FIG. 6

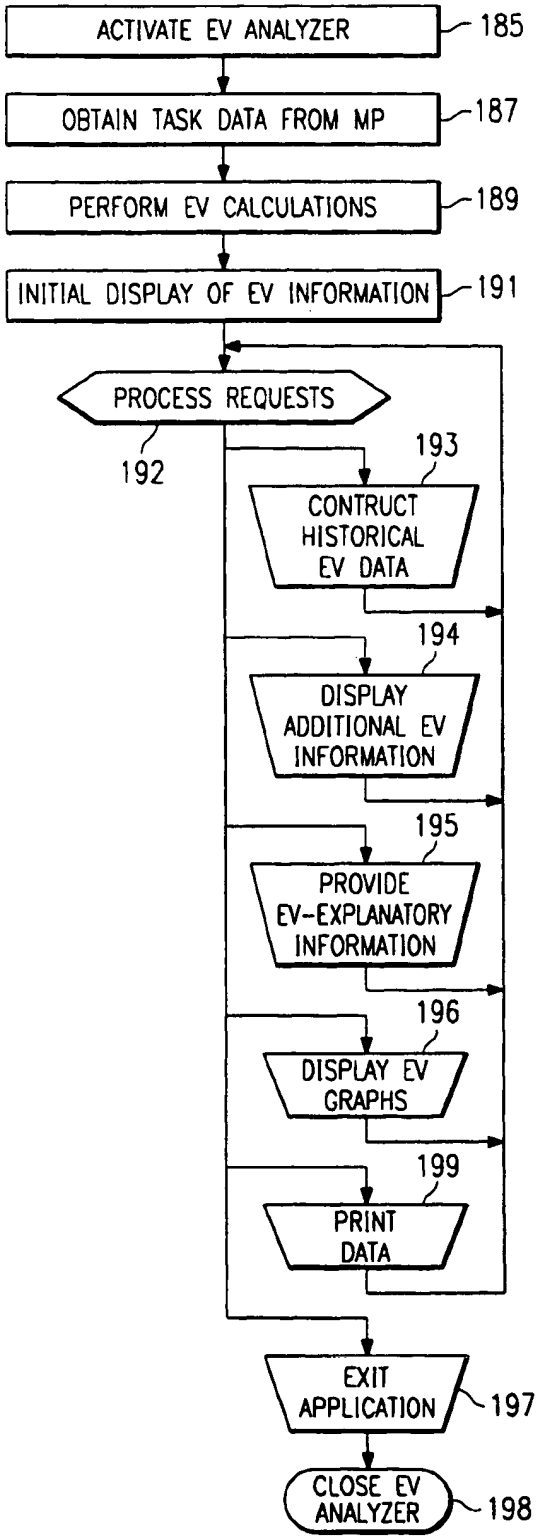
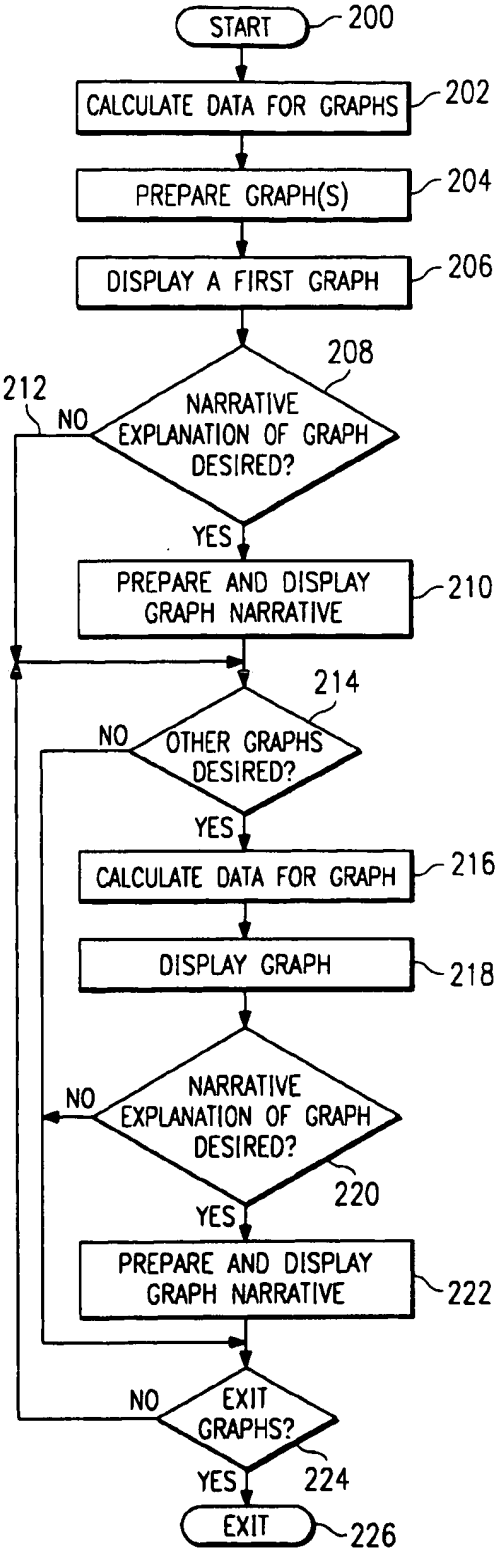

ACTIVATE EV ANALYZER
185
OBTAIN TASK DATA FROM MP
187
PERFORM EV CALCULATIONS
189
INITIAL DISPLAY OF EV INFORMATION
191
PROCESS REQUESTS
192
193
CONTRUCT HISTORICAL EV DATA
194
DISPLAY ADDITIONAL EV INFORMATION
195
PROVIDE EV-EXPLANATORY INFORMATION
196
DISPLAY EV GRAPHS
199
PRINT DATA
EXIT APPLICATION
197
CLOSE EV ANALYZER
198

FIG. 7


START
200
CALCULATE DATA FOR GRAPHS
202
PREPARE GRAPH(S)
204
DISPLAY A FIRST GRAPH
206
208
NARRATIVE EXPLANATION OF GRAPH DESIRED?
212
NO
YES
PREPARE AND DISPLAY GRAPH NARRATIVE
210
214
OTHER GRAPHS DESIRED?
NO
YES
CALCULATE DATA FOR GRAPH
216
DISPLAY GRAPH
218
NARRATIVE EXPLANATION OF GRAPH DESIRED?
NO
220
YES
PREPARE AND DISPLAY GRAPH NARRATIVE
222
EXIT GRAPHS?
NO
YES
224
EXIT
226

SYSTEM AND METHOD FOR PROJECT MANAGEMENT AND ASSESSMENT

TECHNICAL FIELD OF THE INVENTION

The invention relates to project management systems and methods, and more particularly to a software-based system and method for project management and assessment.

BACKGROUND OF THE INVENTION

Good project management is an important factor to the success of a project. A project may be thought of as a collection of activities and tasks designed to achieve a specific goal of the organization, with specific performance or quality requirements while meeting any subject time and cost constraints. Project management refers to managing the activities that lead to the successful completion of a project. Project management focuses on finite deadlines and objectives. A number of tools may be used to assist with project management and assessment.

A fundamental scheduling technique used in project management is the Critical Path Method (CPM). With this model, the tasks that must be completed are determined and task data developed for each. The task data may include the start date, time required, sequencing requirements, finish date, cost effort, and resources. When all the tasks are determined, the path of tasks on the longest sequence for completion of the project becomes what is known as the "critical path" and the tasks on it "critical tasks." The sequencing of tasks in the project may be graphically presented in what is known as a PERT chart. The tasks and their duration may also be presented with a bar chart known as a Gantt chart.

A typical large project may be thought of as having four phases: (a) start up, (b) planning, (c) execution, and (d) close-down. During the planning phase, the numerous tasks that make up the project are determined and task data for each are determined. A baseline may be established when all of the project stakeholders concur on the appropriate plan. The baseline is the approved project plan (amount and timing) for a work assignment, output, set of outputs, or overall project. As used here, cost is an all-inclusive term that includes either dollars or effort hours. The baseline represents cost and effort expenditures with respect to time and activities. The resources necessary to complete project activities provide the basis for determining the cost and effort requirements. This determination is initially performed in the project planning stage and revisited whenever baseline revisions are deemed necessary.

The baseline is referenced throughout the project with the actual data. The actual data refers to the start and finish dates for tasks and actual costs, e.g., actual effort hours, applied or spent on a work assignment, output, set of outputs, or the overall project. At periodic time intervals during the project, the actuals and baseline are compared to determine a variance from the plan and also to forecast anticipated completion dates and costs for all remaining work. The forecast is the predicted cost, e.g., effort hours, to be spent to complete the remainder of a work assignment, output, set of outputs, or the overall project.

One of the more commonly used software packages for project schedule management is Microsoft® Project, which comes in numerous versions such as Microsoft® Project for Windows® 95. Microsoft® Project allows for task data such as duration, start date, finish date, and resources to be entered. As the project advances information on actual performance may be entered and information developed and presented concerning the performance of the project to date. See generally, Tim Pyron and Kathryne Valentine, *Using Microsoft® Project for Windows® 95* (special ed. 1996). Microsoft Project® and other software systems for project management (collectively "project management software") do not, however, provide sufficient or readily-accessible earned value (EV) analysis information.

In managing a project, earned value (EV) analysis is applied to provide a more objective measurement of a project's cost and schedule performance than other project management methods. EV information facilitates analysis of the project's cost and schedule. For example, by comparing earned value with a baseline, the value of the work accomplished is compared to the value of the work planned. By comparing earned value and actuals, the value of work accomplished is compared to the value of the costs actually spent.

SUMMARY OF THE INVENTION

Therefore, a need exists for a software-based system and method for project management and assessment that provides detailed earned value information and related analysis information. In accordance with an aspect of the present invention, a system is provided for monitoring and assessing the performance of a project that includes a computer and a software program associated with the computer, with the software program and computer operable in combination to receive project task data from a project management software, determine current earned value (EV) information from the project task data, and graphically displaying the earned value information.

According to another aspect of the present invention, a method is provided for manufacturing a system for monitoring and assessing the performance of a project that involves providing a computer with a processor and memory, and programming the processor and memory to obtain project task data obtained in project management software, calculate a current earned value position based on the task data, prepare historical earned value positions for each reporting time increment if more than one reporting time increment has passed, and display the present earned value position and any historical earned value positions.

According to another aspect of the present invention, a method is provided for monitoring and assessing the performance of a project by entering task data for each task of the project in a project management software, obtaining the task data from the project management software, calculating a current earned value position, obtaining historical earned value positions if any exists, and displaying the current earned value position and any historical earned value positions.

A technical advantage of the present invention is that it automatically calculates detailed and makes display readily-accessible earned value information. Another advantage of the present invention is that it simplifies comparison of accomplished results to planned results. Another technical advantage of the present invention is that it facilitates the quantification of costs and schedule impacts throughout the project. Yet another technical advantage of the present invention is that it assists in identifying and resolving problems not recognized by other project management tools.

BRIEF DESCRIPTION OF THE DRAWINGS

For a more complete understanding of the present invention and advantages thereof, reference is now made to the following description taken in conjunction with the accom-

panying drawings in which like reference numerals indicate like features and wherein:

FIG. **1** is a Gantt chart for an exemplary project with which the present invention may be utilized;

FIG. **2** is an exemplary graphical display of project data and earned value information for a project according to the present invention;

FIG. **3** is a perspective view of an exemplary system in accordance with the present invention;

FIG. **4** is a block diagram of an exemplary architecture of the system of FIG. **3**;

FIGS. **5***a* and **5***b* are flowcharts illustrating one exemplary process flow for a method according to the present invention;

FIG. **6** is a chart illustrating one exemplary process architecture for the system of FIG. **3**; and

FIG. **7** is a flowchart illustrating one exemplary process for presenting EV information according to the present invention.

DETAILED DESCRIPTION OF THE INVENTION

Preferred embodiments of the present invention are illustrated in FIGS. **1–7** of the drawings, like numerals being used for like and corresponding parts of the various drawings.

EV helps to measure objectively what has been accomplished on a project. Note that the earned value is determined by using the baseline effort, schedule status, and an earned value measurement rule, and is independent of actual effort spent. Objective criteria are preferably used to determine the number of completed tasks and, in some instances, may also include credit for started but not yet completed tasks. For example, the following relatively conservative criteria or earned value measurement rules (Table 1) may be used.

TABLE 1

EARNED VALUE MEASUREMENT RULES

Technique	Description	Some Advantages	Some Disadvantages
0 or 100% Rule	A task that is completed is given 100% credit and one that is not complete is given 0% credit even if its 99% complete at the time of analysis.	The 0–100% rule is simple and objective. The rule promotes completion of tasks.	This rule may underreport accomplishment at intermediate reporting points. It may require more planning detail.
50—50 Rule	A task is considered 50% complete upon initiation of the task, and the final 50% is credited upon completion.	The 50—50 rule is simple and objective. It allows some credit for work started, but not completed. It encourages completion of tasks.	This rule may cause over reporting of tasks that are started but have experienced little work. This rule may require more detail and work in tracking.
Milestone Rule	A task is given increasing	The milestone approach is	The milestone approach is

TABLE 1-continued

EARNED VALUE MEASUREMENT RULES

Technique	Description	Some Advantages	Some Disadvantages
	partial credit as interim milestones within the task are completed.	fairly objective and allows for more incremental credit as a task proceeds toward completion.	relatively complex compared to other rules and requires more time to track.

In some instances, a fourth rule, which is less conservative, is used. The fourth approach or rule is to estimate the percent completion for each task that is underway. This approach is more subjective and consequently, optimistic project managers may overstate the percentage of completion. The four rules given above are illustrative; other rules of a similar nature may be used.

EV information describes what has been accomplished as the project progresses. Without it, the actuals and baseline do not adequately indicate problems or point out the need for additional attention. A simple example will illustrate the need for EV information. Referring to FIG. **1**, a Gantt chart for an exemplary project with which the present invention may be utilized is shown. The project includes three tasks. The ordinate axis **12** lists the three tasks: Task A, Task B, and Task C. The abscissa axis **10** reflects reporting time increments in weeks. For simplicity, the chart has been prepared with the understanding that each task will be worked on by a single person and that the person will devote thirty hours per week to the project. Only Tasks B and C requiring sequencing with Task B preceding Task C as shown. Thus, as reflected by graph line **14**, Task A will take 45 effort hours and consume 1.5 weeks. As shown by graph line **16**, Task B will take 30 effort hours and consume one week, and Task C as shown by graph line **18** will start at the completion of Task B, take 60 effort hours, and be completed at the end of week three. The scheduling shown in the Gantt chart of FIG. **1** is done in the planning process, and as scheduled, constitutes the baseline for the project. The baseline reflects the anticipated expenditure of resources, such as effort hours for each task and the timing of such expenditure. The distinctions between EV, baseline, and actuals will be further described in connection with FIG. **2**.

In using EV, sufficient detail must be included in breaking the project into tasks. Earned value is based on subdividing the work into short-duration tasks. One rule of thumb used sometimes is that no project detail task should be greater than two weeks; otherwise, the earned value analysis may not be sufficiently meaningful for project management and assessment.

Referring now to FIG. **2**, an exemplary graphical display of project data and EV information for a project according to the present invention is shown. The baseline pattern for the delivery of effort hours is shown in the graph along with the EV and actuals based on exemplary information from FIG. **1**. The graph has on its abscissa axis **22** the reporting time increments in weeks and four specific reporting points, R_1, R_2, R_3, and R_4, which are to be discussed. The ordinate axis **24** shows the cumulative effort hours for the project. The baseline has been graphically illustrated by line **26**. The EV valves are shown graphically by line **28**, which has been calculated by the 50—50 rule, and the actual effort hours expended are shown by line **30**.

Considering the results at reporting point one, R_1, the baseline calls for 60 effort hours to have been expended, but 70 hours have actually been spent. At reporting point one, Task B is complete and Task A has been started, and thus under the 50% rule, 52.5 effort hours are considered earned. While it may not be initially apparent without the EV information due to the simplicity of this exemplary three task project, the project is over budget; this is easily seen, however, by comparing the actuals with the EV positions. The project is also behind schedule because the EV position is beneath the baseline. Thus, without EV information, a project manager might believe that the project, while slightly over budget, is at least on time.

If an analysis is conducted at reporting point two, R_2, the information seems to indicate that the project is under budget because actuals are less than baseline, but still behind schedule because the earned value position is still lagging from baseline. Note, however, that the project is over budget from an EV perspective because actuals are greater than the earned value. At reporting point three, R_3, the project is on schedule as indicated by the coincidence of the EV position and the baseline, and the project is under budget as reflected by actuals being lower than the EV position. Finally, at reporting point four, R_4, the project has been completed on schedule and under budget. This simple example shows the importance of objectively tracking completion of tasks during project management, i.e. EV analysis. While not always needed, an

EV analysis can prove to be very important because trends that develop with respect to EV during completion of a project can identify potential longer-term problems related to performance factors or areas of concern for an overall project and thereby help with their resolution earlier in the project.

The EV of a project may be used and analyzed in a number of additional ways to assess a project. Examples of calculations that may be made from EV and related information to provide EV-related information follow:

TABLE 2

EV INFORMATION AND EV-RELATED INFORMATION

	ITEM	EQUATION
(1)	Cost Variance (CV):	CV = earned value − actual
(2)	Variance At Completion (VAC):	VAC = total baseline − forecast
(3)	Cost Variance Percent (CV %):	CV % = [cost variance/EV] * 100
(4)	Cost Performance Index (CPI):	CPI = EV/actual
(5)	Percent Complete (PC):	PC = EV/total baseline * 100
(6)	Percent Spent (PS)	PS = actual/forecast * 100
(7)	To-Complete-Performance Index [Forecast] ($TCPI_f$)	$TCPI_f$ = (total baseline − EV)/(forecast − actual)
(8)	To-Complete-Performance Index [baseline] ($TCPI_b$)	$TCPI_b$ = (total baseline − EV)/(total baseline − actual)
(9)	Improvement Ratio [forecast] (IR_f)	IR_f = [($TCPI_f$/CPI) − 1] * 100
(10)	Improvement Ratio [baseline] (IR_b)	IR_b = [($TCPI_b$ /CPI) − 1] * 100
(11)	Independent Forecast (IF)	IF = actual + [(total baseline − EV)/CPI]
(12)	Schedule Variance (SV)	SV = EV − baseline
(13)	Schedule Variance percent (SV %)	SV % = (SV/baseline) * 100
(14)	Schedule Performance Index (SPI)	SPI = EV/baseline
(15)	Schedule variance in months (SVm)	SVm = SV/(EV/months to date)

While table 2 presents the predominant EV-related information that may be useful or desired, but other EV calculations may be performed to yield EV-related information.

Referring to FIG. **3**, a perspective view of an exemplary system in accordance with the present invention is shown. Exemplary system **110** for project management and assessment includes a microprocessor-based computer **120**. Computer **120** preferably has an Intel 80x86 microprocessor such as an 80486 or Pentium that may be housed in a main computer portion **121**. Computer **120** is preferably capable of running Microsoft Windows® Version 3.1 or higher and Microsoft® Project (MP) or other project management software. Computer **120** will typically include components such as an internal hard drive or other suitable program memory, and/or one or more disc drives for uploading programs and data. Computer **120** may also include other devices such as a CD ROM drives, optical drives and/or other devices. Computer **120** includes a sufficient amount of memory to support its operating system as well as all applications and utility software desired to run on computer **120**.

Computer **120** includes a display screen **122** which may have a graphical user interface (GUI). Computer **120** may receive input from a touch screen; a pointing device **124**, which may be any of a number of devices such as a mouse, a touch pad, a roller ball, or other devices; and may also receive input through keyboard **126**. Computer **120** is further programmable and operable to perform EV analysis according to the system and methods of the present invention. The programming of computer **120** to carry out the steps discussed herein, may be accomplished with any number of computers and any number of programming languages or applications, but in a preferred embodiment, is programmed using Microsoft®'s VISUAL BASIC.

Referring now to FIG. **4**, a block diagram of an exemplary architecture **50** within the system of FIG. **3** is shown. As an important aspect of the present invention, a software module or programming segment **52** is used to calculate and display EV information and EV-related information. Module or segment **52** will be referred to as an "EV analyzer" **52**. An object link **54** is established between the EV analyzer **52** and the project management software **56**; which software **56**, by way of example, is shown as Microsoft Project®, with its data file **56**. Object link **54**, which may be an object link (OLE2) in Microsoft® VISUAL BASIC, allows information such as task data, to be delivered upon request to EV analyzer **52**. EV analyzer **52** may also receive information by a data link **58** from a historical data file **60**. File **60** may be a floppy disk or hard disk or other storage medium accessible to EV analyzer **52** on computer **120**.

Referring now to FIGS. **5***a* and **5***b*, a flowchart illustrating one exemplary process flow for a method according to the present invention is shown. The basic events are presented and then described in more detail further below. The process is accomplished with architecture **50** (FIG. **4**) described

above as part of system **100** (FIG. **3**). After starting at block **150**, the first step is for the project management software, to be activated as shown in block **152**. Then, the specific project schedule file or data file is opened as shown at block **154**. The EV analyzer program segment is then initiated as reflected at block **156**. Once initiated, the EV analyzer obtains the project data or task data from the project management software as shown at block **158**. Current EV information is then calculated by the computer at block **160** and displayed at block **162**.

An operator interfacing with the computer may then enter a number of different process requests as reflected at block **164**. While the specific process flow may be arranged in parallel with different paths being defined by the operator, for convenience in FIGS. **5***a* and **5***b* they are presented as a sequential process flow which first begins by determining whether EV-related information has been requested (interrogatory block **166**). If additional information has been requested, the additional information is calculated or retrieved and displayed at block **168**. The process then returns along path **170** to block **164** where additional process requests may be entered.

If the answer to interrogatory block **166** is in the negative, the process continues to interrogatory block **172** to determine whether EV-explanatory information has been requested. EV-explanatory information helps explain the information to the operator. If EV-explanatory information has been requested, it is prepared and displayed as reflected by block **174**. The process then continues along path **176** back to block **164**. If the answer to interrogatory block **172** is in the negative, the process continues to interrogatory block **178**, which determines whether the operator desires EV information to be graphically displayed. If so, at interrogatory block **180**, the operator may be asked or the computer may determine on its own whether a historical EV file exists. If such a file does exist, the process proceeds to block **182** where the historical EV information file is accessed to obtain historical EV data. At block **184**, the current EV information and historical EV information are prepared and graphically displayed on the computer monitor. If interrogatory block **180** is negative, the process proceeds directly to block **184**. Once the activities of block **184** are completed, the process returns to block **164** where additional process requests may be received.

If the answer to interrogatory block **178** is in the negative, the process continues to interrogatory block **186**, which determines as to whether the operator desires to exit from the EV analyzer. If not, the process flow continues to block **164**. If the answer is in the affirmative, the EV analyzer is closed at block **188** and the process ends as reflected at block **190**. An option to print any screens or data prepared during processing with EV analyzer may be added throughout the process.

Referring now to FIG. **6**, a chart illustrating one exemplary process architecture for the system of FIG. **3** is shown. FIG. **6** is analogous in most respects to the process flow of FIG. **6** but shows the structure of the process requests in a non-sequential manner. The EV analyzer is activated at block **185**. The EV analyzer obtains the task data from the project management software, as reflected at block **187**. Initial EV calculations are performed at block **189**, and the initial presentation of EV information is made at block **191**. Numerous process requests may then be entered as shown at block **192**. The options illustrated include constructing historical data by decompositing it from task data as shown at block **193**, displaying additional EV information or EV-related information at block **194**, providing EV explanatory information at block **195**, displaying EV graphs at block **196**, or printing any of the EV information or EV-related information or graphs at block **199**. The application may also be exited as reflected by block **198**.

As suggested by block **193**, an additional option for presenting historical information is to construct a report of historical data. This may be accomplished by analyzing previous EV information for previous time reporting increments. Thus, the task data may be obtained through the object link **54** (FIG. **4**) and decomposed or analyzed at different increments to obtain historical EV information and EV-related information at each increment. The decomposition involves calculating for each reporting time increment, e.g., weeks, between the baseline project start date and the current date, the CPI, SPI, BCWP, BCWS, ACWP, CV % and SV %. The data points corresponding to each reporting time increment may then be used to prepare the historical EV information as well as the current EV information. The historical data alone or with the current data may then be displayed.

As discussed above, once the active schedule or task data is obtained from the project management software, through the object link, information and EV-related information may be determined and displayed as suggested by blocks **160** and **162** (FIG. **5**) and blocks **189** and **191** (FIG. **6**). This information may include the cost variance, cost variance percent, cost performance index, schedule variance, schedule variance percentage, schedule performance index, percent complete, percent spent, forecast at completion, to-complete-performance index (forecast), to-complete-performance index (baseline), improvement ratio (forecast), improvement ratio (baseline), variance at completion, and/or independent forecast among other possible calculations.

Additionally, a historical data file may be obtained if it exists and additional trend information developed if desired. Thus, upon opening the EV analyzer, the initial screen may display, for example, the cost variance, cost variance percent, cost performance index, schedule variance, schedule variance percent, and schedule performance index. This initial screen may also serve as a process request screen for additional information or activities. In addition to the exemplary process requests discussed above, a user may, for example, request trend analysis graphs as will be described further below.

If additional information regarding EV is desired as indicated at blocks **166** and **194**, the information is prepared for display. The desired information may have already been calculated above at block **160**, but if not the calculations may be made and then displayed. Such request may involve merely clicking a button on an initial screen instructing the EV analyzer to present additional EV-related information. For example, if only EV information and two EV-related numbers are initially presented (i.e., a default setting), the operator may request other EV-related information.

If an operator desires additional information explaining the EV information or EV-related information, an operator may click on a button associated with different display fields. When this is done, the information is evaluated to provide conditional narrative information based on the current EV information or EV-related information as calculated. The conditional aspect provides information or instructions appropriate for the current EV-related information, such as information indicating that performance is poor and corrective action should be considered or that performance is good and the like. The narrative and information is then displayed incorporating the specific current EV information or EV-related information. For example, if an operator desires

to learn more about the percent of project complete information the operator may click on that number on the screen at which time the number is analyzed by the EV analyzer to determine the exact response. The response may be something such as:

> percent complete indicates what percentage of the project is complete based on the ratio of earned value (also known as BCWP-Budget Cost of Work Performed) to the total project baseline. At this point in your project, you have delivered [the specific amount would be inserted here] of earned value in relationship to the [insert specific amount here] of the total project earned value which was baselined for delivery.

A conditional information statement may be added based on how the information reflects performance; for example, it may say something like that shown below:

> A word of caution! You may want to take a look at your project from a cost performance perspective, we can see that although you have delivered 33% [number here is just for example] of the project from an earned value perspective, you've expended 38.4% [number is just for example] of your baseline budget for this project.

As another example, the operator may click on the percent spent field requesting additional information and receive a response something like:

> Percent spent indicates what percentage of the project budget has been spent based on the ratio of actual cumulative total expenditures to the project's current total expenditure forecast. At this point in your project, you have spent 38.46% [number is just for example] of your total forecasted budget of $15,600 [numbers just for example purposes]. A word of caution! You may want to take a look at your project from a cost performance perspective. We can see that you have spent 38.46% of your project budget, but you only delivered 33.3% of your total earned value baseline.

These are but two examples, other fields would have like definitions and explanatory information and may or may not have conditional or cautionary statements. The EV analyzer may compare the EV information and EV-related information against tables in determining whether a conditional statement should be added and what information it should contain. For example, if a given number is greater than a specified magnitude or greater than a specified percentage, it may be indicative of some type of problem, suggesting that a cautionary statement may be added to the explanation.

As another aspect of providing conditional statements, a coloring scheme may be used to help convey the general impact of the numbers calculated. If a negative variance is calculated and is to be displayed, it may be presented in a specific color to designate it is a negative and to call attention to it; for example, it may be displayed in red if its negative, and green may be used if it is positive. While it is normal for every project to have some variation between baseline, actual, and earned value, variances that are significant need to at least be resolved and carefully considered. A variance may be considered significant when it exceeds both a specified value or magnitude and a percent threshold. Different thresholds may be established for current month, cumulative, and at-completion variances. For example, higher current-month thresholds may be established to compensate for the inherent monthly positive and negative swings that may occur. The permissible at-completion variance may be smaller because it forecasts an overall impact on the project.

If additional EV information is requested at blocks **178** and **196** a number of different types of additional information may be prepared. By accessing historical data file or decomposing task data as will be described further below, graphs and other trend information showing the performance of the project with a historical perspective may be presented. In a preferred embodiment, the information is presented in the form of several different types of graphs and may be in the form of several different types of graphs. Each of the different types of graphs is preferably calculated in advance (i.e., before it is requested) such that the operator is only toggling between different screens that have already been prepared with the different presentations of the appropriate information. For example, on one screen, the cost and schedule variance percentages for EVA may be presented with percent on the ordinate and time on the abscissa. On another screen or window, the cumulative EVA may be presented with money or effort hours on the ordinate and time on the abscissa axis. On a further screen or window, cost performance index to schedule performance index ratio graph may be presented with the ratio on the ordinate and time on the abscissa axis. The prominent graph of the baseline, actuals, and cumulative EV for the project may be presented in a form like that shown in FIG. **2**.

For each graph presented, the operator may request additional information concerning the graph by selecting a button, selecting an item from a menu, clicking on a location on a graph, or other similar input. Such a selection would bring up a graph explanation display. For example, if an operator is doing the cost and schedule variance percentages graph and requests additional information about the graph, an explanation such as the following may be raised:

> The variance percentages graph show the trend for two earned value indicators, cost variance percent and schedule variance percent. Cost variance percentage shows how far the cost performance of the project is from the baseline. In a sense, it is like asking was the work we accomplished this reporting period delivered at cost discount or cost premium? The ability to see the cost percentage trend over the life of the project should provide some feeling about the consistency with which actual expenditures are tracking to the baseline. The schedule variance percentage provides an indication regarding the consistency at which schedule activities are being completed with respect to the baseline. In effect, it is like asking the question, for this reporting period, how close to the baseline were we in completing our activities on time?

The screening can also give more specific information about the indications of positive and negative variances. For example, if the operator desires more information on the schedule performance to cost performance indices graph, the following information may be raised as a narrative:

> The SPI/CPI graph shows the cumulative track of performance indices for cost/schedule and the RN value index. If the project is on schedule and within budget, both indicators should track at 1.0. The CPI tells us for each dollar we spend, how much earned value are we receiving in return. The SPI tells us for every dollar we have spent to date, how much schedule progress are we receiving in terms of earned value.

Appropriate narratives may be added as desired for each graph.

FIG. **7** is a flowchart illustrating one exemplary process for presenting EV information according to the present invention. When the process is started such as at block **184** of FIG. **6**, and as shown in FIG. **7** at block **200**, any additional calculations necessary for the preparation of the graphs which had not previously been performed are calcu-

lated at block **202**. The underlying data is formatted and prepared for display at block **204**. While a number of graphs may be prepared for display in blocks **202** and **204**, one such graph is selected as a default and displayed at block **206**.

If interrogatory block **208** is answered in the negative, the process proceeds directly to block **214**; otherwise, the narrative explanation of the graph is prepared and displayed at block **210** before continuing to interrogatory block **214**. At interrogatory block **214**, an operator may select from the various graphs available. If the operator desires another of the specific graphs, the answer to interrogatory block **214** will be in the affirmative and the process continues to block **216** and block **218** where any additional data is calculated and then displayed. As noted above, the data required for display may have already been calculated. The operator may then indicate a desire for a narrative explanation of the graph as shown by interrogatory block **220**. If such an explanation is desired, the process prepares and displays such information at block **222** and then continues to interrogatory block **224**.

If the answer to interrogatory block **220** or **214** is in the negative, the process directly proceeds to block **224**. At interrogatory block **224**, the operator is given the opportunity to exit the graph portion of the EV analyzer. If the answer to interrogatory block **224** is in the affirmative the process for presenting EV information ends at block **226** and the process flow may continue to block **164** along path **176** (FIG. **5**) as described earlier. Before exiting, the operator may be asked whether the current EV information should be stored in the historical EV data file. If the answer to interrogatory block **224** is in the negative, the process flow preferably returns to interrogatory block **214** to allow the operator to request additional graphs.

Although the present invention and its advantages have been described in detail, it should be understood that various changes, substitutions, and alterations can be made therein without departing from the spirit and scope of the invention as defined by the appended claims.

What is claimed is:

1. A system for monitoring and assessing the performance of a project, comprising:

a computer; and

a software program executed by the computer, the software program and computer being operable in combination to:

receive project task data,

determine earned value information from the project task data,

display the earned value information,

prepare explanatory information about the earned value information, the explanatory information including conditional information prepared with a content dependent on the earned value information, and

display the explanatory information.

2. The system of claim **1** wherein the earned value information includes earned value related information.

3. The system of claim **1** wherein the computer is operable to receive operator requests from an operator, and wherein the preparation and display of the explanatory information is carried out in response to an operator request therefor.

4. The system of claim **1**, wherein the software program and computer are further operable to prepare the conditional information so that the content thereof provides a comparison of earned value information to other information.

5. The System of claim **4**, wherein the other information includes budget information.

6. The system of claim **1**, wherein the software program and computer are operable to prepare the explanatory information to include predetermined nonconditional information in addition to the conditional information.

7. The system of claim **1**, wherein the conditional information includes a cautionary statement.

8. The system of claim **1**, wherein the software program and computer are operable to prepare the conditional information by selecting one of two colors in dependence on the earned value information, and are operable to effect the display of the conditional information by displaying at least a portion thereof in the selected color.

9. The system of claim **8**, wherein the software program and computer are operable to effect the selection of a color by determining whether a value from the earned valued information is outside a predetermined limit.

10. The system of claim **8**, wherein the software program and computer are operable to effect the selection of a color by determining whether a value from the earned value information is outside each of two different predetermined limits.

11. A method for monitoring and assessing the performance of a project, comprising the steps of:

obtaining project task data;

calculating earned value information from the project task data;

displaying the earned value information,

preparing explanatory information about the earned value information, including the step of preparing conditional information which is included in the explanatory information and which has a content dependent on the earned value information, and

displaying the explanatory information.

12. The method of claim **11** wherein the earned value information includes earned value related information.

13. The method of claim **11**, wherein said step of preparing the conditional information includes the step of preparing the conditional information so that the content thereof provides a comparison of earned value information to other information.

14. The method of claim **13**, wherein said step of preparing the conditional information includes the step of including budget information in the other information.

15. The method of claim **13**, wherein said step of preparing the conditional information includes the step of obtaining the other information from a table.

16. The method of claim **11**, wherein said step of preparing the explanatory information includes the step of including predetermined nonconditional information in the explanatory information in addition to the conditional information.

17. The method of claim **11**, wherein said step of preparing the conditional information includes the step of including a cautionary statement therein.

18. The method of claim **11**, wherein said step of preparing the conditional information includes the step of selecting one of two different colors in dependence on the earned value information, and wherein said step of displaying the conditional information includes the step of displaying at least a portion thereof in the selected color.

19. The method of claim **18**, wherein said step of selecting a color includes the step of determining whether a value from the earned value information is outside a predetermined limit.

20. The method of claim **18**, wherein said step of selecting a color includes the step of determining whether a value from the earned value information is outside each of two different predetermined limits.

* * * * *

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United States Patent [19]

Mansour

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[45] Date of Patent: Mar. 7, 2000

[54] METHOD AND SYSTEM FOR SCHEDULE AND TASK MANAGEMENT

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[21] Appl. No.: **08/889,660**

[22] Filed: **Jul. 8, 1997**

[51] **Int. Cl.**[7] **G06F 15/21**

[52] **U.S. Cl.** **705/9**; 705/5; 705/6; 705/8; 705/9

[58] **Field of Search** 705/8, 9, 5, 6; 707/10

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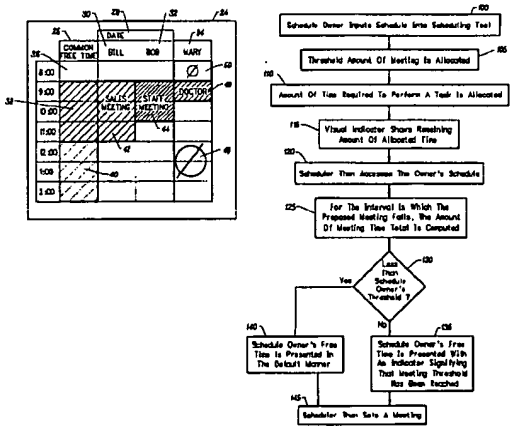
Assistant Examiner—Cuong H. Nguyen
Attorney, Agent, or Firm—Michael A. Glenn

[57] **ABSTRACT**

A method and system are provided for scheduling and time management. The invention is adapted for use with computer systems, including intranet and Internet systems. The schedule owner schedule tasks and appointments with a scheduling tool. A threshold amount indicating the total amount of meetings or other interruptions the schedule owner prefers during a time period is selected. This threshold amount is defined according to number, time, type, or scheduler. A scheduler accesses the schedule with the scheduling tool to search for un-scheduled times in which to set a meeting. If such meeting exceeds the threshold amount, a signal is given by the scheduling tool. Alternative embodiments permit or prohibit the scheduling of a meeting in excess of said threshold. The invention is also operable as a group scheduling application. The schedules of any number of prospective attendees are compared to locate a time at which all of said users are available. A meeting may then be scheduled at that time. The scheduling tool signals the scheduler if the meeting exceeds the threshold amount of any of the prospective attendees. The invention permits the schedule owner to manage the amount of time required to complete a task. The schedule owner selects the amount of time required to perform the task. The scheduling tool displays an indicator showing a remaining amount of the selected time. Additionally, the scheduling tool may be configured to automatically connect the scheduler to one of an email, voice mail, or computer messaging.

21 Claims, 2 Drawing Sheets



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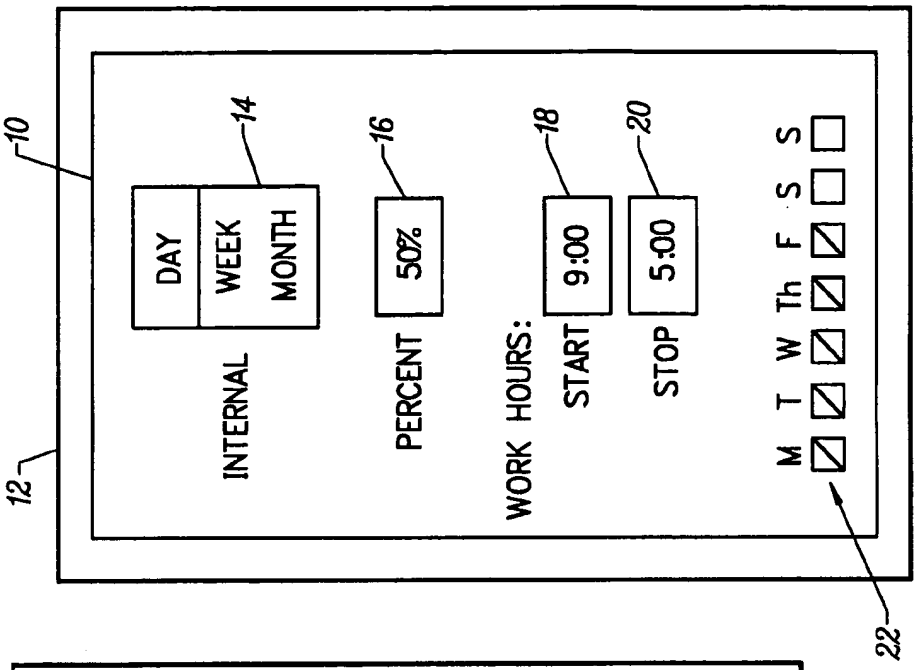
10
12
14
DAY
WEEK
MONTH
INTERNAL
16
50%
PERCENT
18
9:00
20
5:00
WORK HOURS:
START
STOP
M T W Th F S S
22

FIG. 1

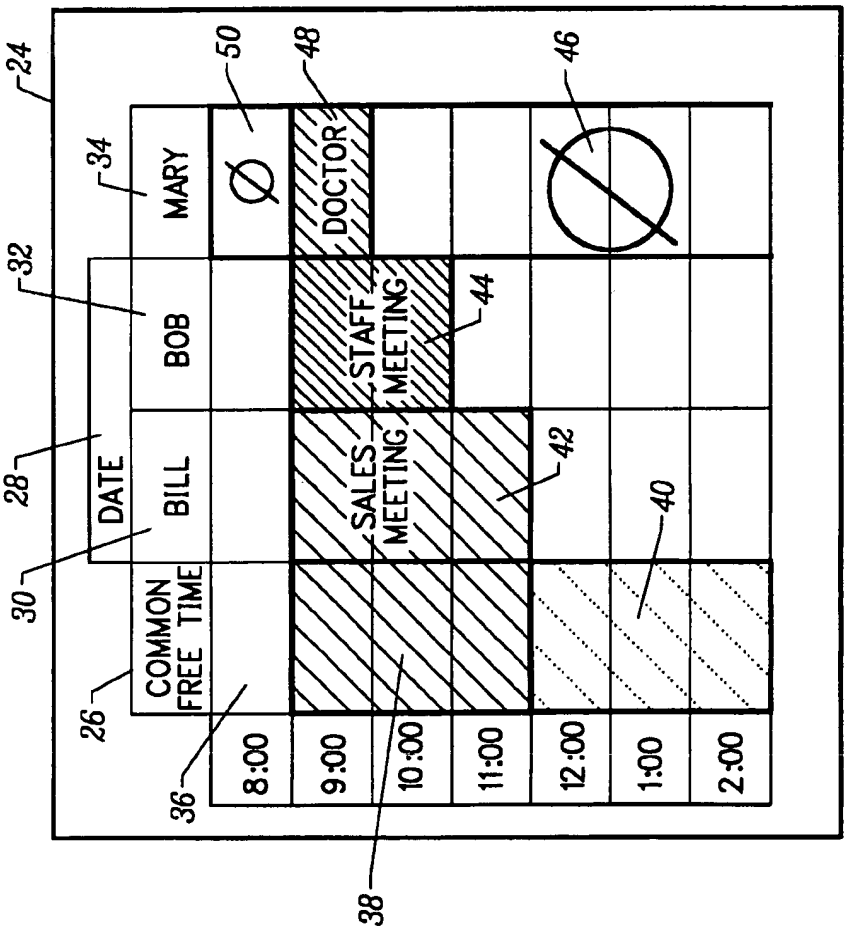
24
34
MARY
32
BOB
28
DATE
BILL
30
COMMON FREE TIME
26
36
8:00
9:00
10:00
11:00
12:00
1:00
2:00
50
48
DOCTOR
STAFF MEETING
44
SALES MEETING
42
46
40
38

FIG. 2

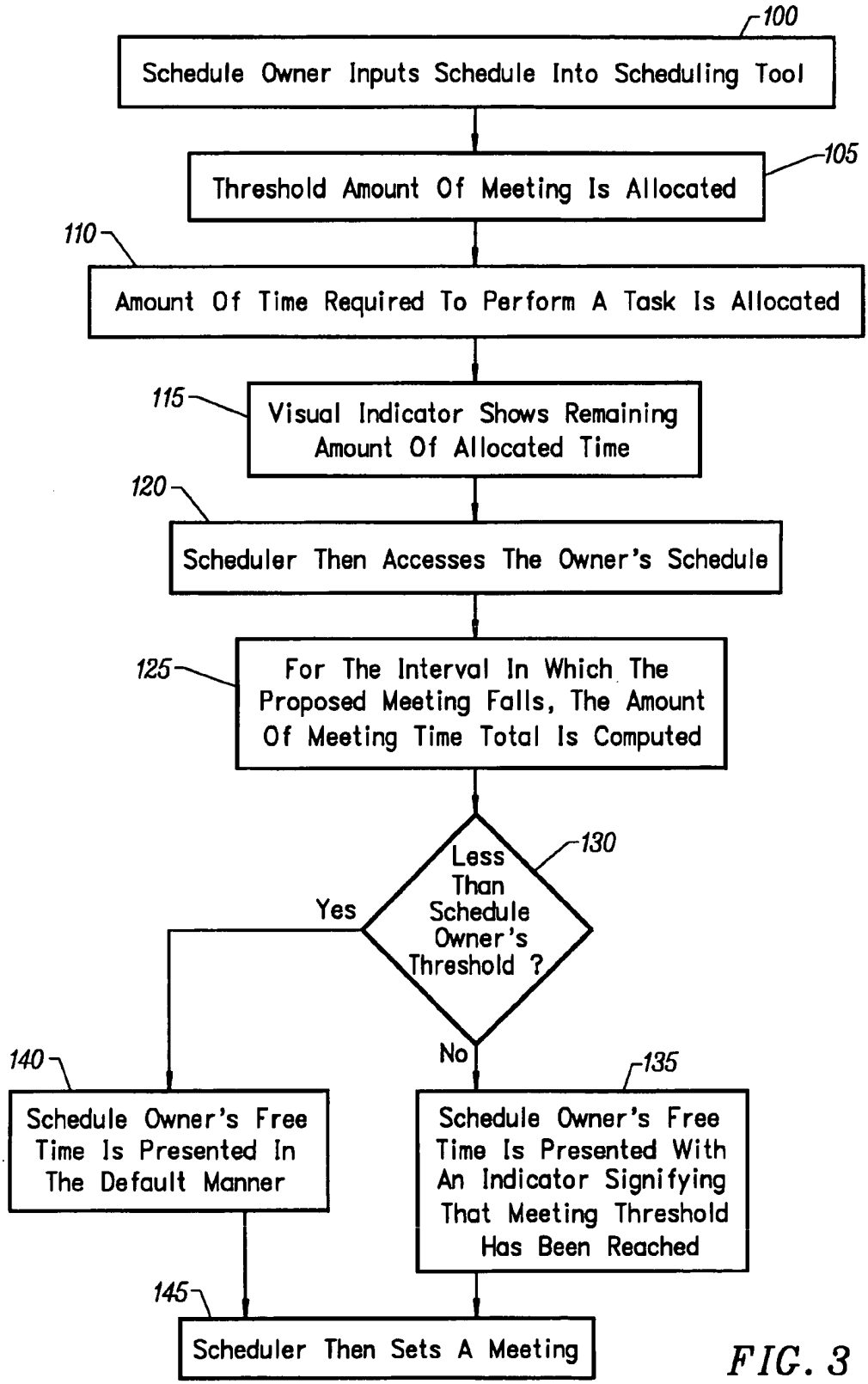
100
Schedule Owner Inputs Schedule Into Scheduling Tool
105
Threshold Amount Of Meeting Is Allocated
110
Amount Of Time Required To Perform A Task Is Allocated
115
Visual Indicator Shows Remaining Amount Of Allocated Time
120
Scheduler Then Accesses The Owner's Schedule
125
For The Interval In Which The Proposed Meeting Falls, The Amount Of Meeting Time Total Is Computed
130
Less Than Schedule Owner's Threshold ?
Yes
No
140
Schedule Owner's Free Time Is Presented In The Default Manner
135
Schedule Owner's Free Time Is Presented With An Indicator Signifying That Meeting Threshold Has Been Reached
145
Scheduler Then Sets A Meeting

FIG. 3

METHOD AND SYSTEM FOR SCHEDULE AND TASK MANAGEMENT

BACKGROUND OF THE INVENTION

1. Technical Field

The invention relates to office management. More particularly, the invention relates to a method and system for managing a meeting schedule.

2. Description of the Prior Art

Individual and group scheduling applications are known in the prior art. Such scheduling applications display a person's schedule, indicating free and busy times. The schedules of several people may be compared and the common free times displayed. A meeting may therefore be scheduled at a time when all persons can attend.

The prior art scheduling applications do not take into account other tasks which must be performed by the prospective attendees. For example, an employee requires sufficient time during the week to complete work assignments. However, a person scheduling meetings is frequently not aware of the level of intrusion of such meetings on the schedule owner.

Two problems occur when the time devoted to a task is interrupted. The first problem is that the lost time must be made up to keep the task completion on schedule. This lost time is frequently made up after regular working hours or on weekends. The second problem encountered is attributed to context switching.

Estimates for the amount of time to complete an assignment are typically based on uninterrupted time. Thus, an estimated one hour assignment may be completed in one uninterrupted hour, but not in four separate 15 minute sessions. This is because time is required to become re-oriented to the task, and to begin again. The more interruptions, the greater the deleterious effect on completing the task.

However, the prior art group scheduling packages allow the employee to be scheduled for meetings at any time that has not already been booked for a meeting. In fact, the employee may be double-scheduled for meetings. Much or all of the employee's time may therefore be scheduled, thereby significantly restricting the time available to perform tasks. Therefore, the employee must make up the lost time, despite having scheduled in advance sufficient time to complete the task.

The need has therefore arisen for a scheduling package that gives the schedule owner some control over the amount of interruptions that can be scheduled. The need has also arisen for tracking the amount of time that the schedule owner has to recoup as a result of such interruptions.

It would be an advantage to provide a system and method for scheduling and time management that notifies the scheduler of an infringement on a prospective attendee's time. It would be a further advantage if such system and method permitted group scheduling of meetings. It would be yet another advantage if such method and system permitted a user to dynamically allocate available time for meetings.

SUMMARY OF THE INVENTION

The invention provides a method and system for scheduling and time management. The preferred embodiment of the invention is used with computer systems, including Intranet and Internet systems. The schedule owner uses a scheduling tool to schedule tasks and appointments during a period of time. The schedule owner also selects a threshold amount of meetings in this time period. This threshold amount of meetings is the total amount of meetings or other interruptions that the schedule owner prefers during the period.

In the preferred embodiment of the invention, this threshold amount may be defined by any of the number of meetings, time per meeting, or total time of all meetings. The threshold amount may further be defined by the type of meeting, or according to the person scheduling the meeting. Thus, the threshold amount of meetings with an employer may be scheduled to exceed the amount of meetings with a sales representatives.

A scheduler accesses the schedule owner's schedule using the scheduling tool. The scheduler may then search the schedule owner's schedule to locate un-scheduled or free times. The scheduler uses the scheduling tool to schedule meetings with the schedule owner. If such meeting exceeds the threshold amount selected by the schedule owner, a signal is given by the scheduling tool. This signal is any of a text, graphical display, visual display, sound, animation, video display, or voice message.

In the preferred embodiment of the invention, the scheduling tool permits the scheduling of a meeting in excess of said threshold. However, in an alternative embodiment, scheduling a meeting in excess of said threshold is prohibited.

The scheduler may access the scheduling tool and schedule owner's schedule on a networked computer. Alternatively, the scheduler may also use the schedule owner's computer. For example, an administrative assistant may access an employer's computer to schedule or confirm meetings using the invention.

The invention is also operable as a group scheduling application. The scheduling tool may access the schedules of any number of prospective attendees. These schedules are compared to locate a time at which all of said users are free. A meeting may then be scheduled in that free time. The scheduling tool signals the scheduler if the meeting exceeds the threshold amount of any of the prospective attendees.

The invention is configurable to permit the scheduler to schedule a meeting if a certain number, but not all prospective attendees are available. Additionally, the invention is configurable to permit the meeting to be scheduled if the threshold amount is reached for fewer than a certain number of prospective attendees.

The invention permits the schedule owner to manage the amount of time required to complete a task. The schedule owner selects the amount of time required to perform the task. The scheduling tool displays an indicator showing a remaining amount of said selected time.

The invention may provide a visual or audio display of the schedule. Additionally, the scheduling tool may be configured to automatically connect the scheduler to one of an email, voice mail, or computer messaging.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a view of a setting dialog according to the invention;

FIG. 2 is a view of a displayed schedule from the scheduling tool according to the invention; and

FIG. 3 is a flowchart of the method for scheduling and time management according to the invention.

DETAILED DESCRIPTION OF THE INVENTION

The invention provides a method and system for scheduling and time management. The preferred embodiment of

the invention is used with computer systems, including Intranet and Internet systems. However, the invention may also be used with other devices, including personal data assistants, and Internet-capable telephones. The invention is readily implemented by one skilled in the art using well-known programming techniques and equipment.

The invention provides a method and system for scheduling and time management. The preferred embodiment of the invention is used with computer systems, including intranet and Internet systems. A schedule owner uses the invention to dynamically allocate a desired amount of meetings in a period of time. The schedule owner also uses the invention to manage the completion of a designated task. A schedule uses the invention to schedule meetings with the schedule owner. The invention notifies the scheduler when the schedule owner has been scheduled for more than the desired number of meetings. The scheduler is thereby made aware whether the prospective meeting may be an undue burden on the schedule owner.

The schedule owner uses a scheduling tool to schedule tasks and appointments during a period of time. FIG. **1** is a view of a setting dialog **10** according to the invention. The scheduling tool is interactively displayed, for example, on the display screen **12** of the schedule owner's computer. The schedule owner inputs information to the scheduling tool by any of such device as keyboard entry, menu selection, and touch screen selection. For example, the setting dialog may include input boxes that permit the schedule owner to select the interval **14** for the schedule. Starting and stopping work hours **18**, **20** and work days **22** may also be designated.

The schedule owner also uses the scheduling tool to select a threshold amount of meetings in this time period. This threshold amount of meetings is the total amount of meetings or other interruptions that the schedule owner prefers during the period. The threshold amount may vary, for example, according to the job, responsibilities, and particular work load of the schedule owner.

In the preferred embodiment of the invention, this threshold amount is defined by the percentage of time **16** allocated to meetings. In alternative embodiments, the threshold amount is defined by number of meetings, time per meeting, total time of all meetings. As an example, the schedule owner can designate thresholds of 4 meetings, two hours maximum per meeting, or 8 hours total meeting time per week. The threshold amount may further be defined by the type of meeting, or according to the person scheduling the meeting. Thus, the threshold amount of meetings with an employer may be scheduled to exceed that for meetings with sales representatives.

The scheduling tool is also used by a scheduler to access the owner's schedule. The schedule may be, for example, an employer, or any person to whom the schedule owner has given permission to access the schedule. The scheduler uses the scheduling tool to locate unscheduled times in the owner's schedule. Meetings are then preferably set during such unscheduled times.

If the prospective meeting exceeds the threshold amount selected by the schedule owner, a signal is given by the scheduling tool. This signal is one of a text, graphical display, visual display, sound, animation, video display, or voice message. In the preferred embodiment of the invention, the signal is a visual display in the background of the schedule. For example, the background of the block representing the time of the prospective meeting can be shaded a different color, or display text or graphical symbols indicating that threshold has been reached. The invention is also operable as a group scheduling application. The scheduling tool may access the schedules of any number of prospective attendees.

FIG. **2** is a view of a displayed schedule **24** from the scheduling tool, according to the invention. This schedule is displayed, for example, on the display screen of the scheduler's computer (not shown). The display shows employees' schedules **30**, **32**, **34** for a particular date **28**, as well as their common free time **26**. In FIG. **2**, the schedules are arranged according to time of day. The display configuration shown in FIG. **2** is for exemplary purposes only, and is not intended to be a limitation upon the scope of the invention. It will be readily appreciated by one skilled in the art that the schedule display may be configured differently, according to the requirements of the users.

Each employee's schedule indicates un-scheduled, or "free" times **50** as well as scheduled time. For example, employee Bill **28** has a scheduled sales meeting **42** between the hours of 9:00 and 12:00. Bob **32** has a staff meeting **44** scheduled from 9:00 until **11:00**. Mary **34** has a doctor's appointment **48** between 9:00 and 10:00.

These schedules are compared to locate a common time **36** at which all of said users are free. A meeting may then be scheduled in that free time. In the Figure, the only common free time is between 8:00 and 9:00. If the scheduler sets a meeting between the hours of 12:00 and 2:00, the scheduling tool signals the scheduler. This is because Mary has reached her threshold amount of meetings. In the example, this is indicated by a "Stop" symbol **46** in Mary's schedule. The invention may be configured to signal the scheduler when any individual employee, or when all employees have reached their threshold. In the Figure, stippling **40** is used to indicate that the hours between 12:00 and 2:00 common free time, but that at least one invitee has reached their threshold.

FIG. **3** is a flowchart of the method for scheduling and time management, according to the invention. The schedule owner first inputs **(100)** the owner's schedule into the scheduling tool. The threshold amount of meetings is allocated **(105)**. The schedule owner may optionally allocate the amount of time required to perform a task **(110)**. The scheduling tool subsequently displays a visual indicator **(115)** showing the remaining amount of the allocated time. The scheduler then accesses the owner's schedule **(120)**. The scheduling tool locates free time **(125)** and displays it, taking the threshold into account. If less than the schedule owner's threshold has been scheduled **(130)**, the schedule owner's free time is scheduled in a default manner **(140)**. The scheduler then sets a meeting **(145)**. If the schedule owner's free time threshold has been exceeded **(130)**, the schedule owner's free time is presented with an indicator signifying that the meeting threshold has been reached **(135)**. The scheduler may then set a meeting **(145)**, preferably during the free time and, more preferably, when no invitee's threshold has been reached.

The signal may also be configured to indicate a specific status. For example, the color red may be used to indicate that the schedule owner is absolutely not available during a particular time slot. Blue may be used to indicate that the schedule owner is available during that time.

In the preferred embodiment of the invention, the scheduling tool permits the scheduling of a meeting in excess of said threshold. The preferred embodiment also permits more than one meeting to be scheduled at the same time.

However, in an alternative embodiment, scheduling a meeting in excess of said threshold is prohibited. The schedule owner may also be given authority to accept or decline any meeting set by the scheduler.

The scheduler may access the scheduling tool and schedule owner's schedule on a networked computer. As an example, the schedules of all employees may be stored on an intranet server. Employers can then use the invention to monitor employees' work, as well as to schedule meetings. Alternatively, the scheduler may also access the schedule using the schedule owner's computer. For example, an administrative assistant may use the invention to access an employer's computer and schedule or confirm meetings.

The invention is configurable to permit the scheduler to schedule a meeting if a certain number, but not all prospective attendees are available. Additionally, the invention is configurable to permit the meeting to be scheduled if the threshold amount is reached for fewer than a certain number of prospective attendees.

The invention permits the schedule owner to manage the amount of time required to complete a task. The schedule owner selects the amount of time required to perform the task. In the preferred embodiment of the invention, the scheduling tool displays a visual indicator showing a remaining amount of said selected time. In alternative embodiments, this indicator is aural.

The invention may provide a visual or audio display of the schedule. Additionally, the scheduling tool may be configured to automatically connect the scheduler to one of an email, voice mail, or computer messaging.

Although the invention is described herein with reference to the preferred embodiment, one skilled in the art will readily appreciate that other applications may be substituted for those set forth herein without departing from the scope of the present invention.

The scheduling tool may readily be adapted to provide an audio display of said schedule. Thus, when a scheduler accesses a schedule, the schedule is provided as a sound file, for example, projected through the speakers of the scheduler's computer. The invention therefore permits users to leave the computer to perform other tasks while the requested schedule is accessed.

The invention may be interfaced to other software applications or electronic devices. For example, the invention may interface with a fax program. Thus, a fax may be sent at a time designated in the schedule.

The invention may also be interfaced with email, voicemail, or pager devices. As an example, the scheduler may be automatically connected to voicemail when the meeting threshold has been reached. The scheduler may thereby leave a message for the schedule owner explaining the purpose for the meeting.

In an alternative embodiment of the invention, the schedule is configured to restrict the scheduling of meetings according to scheduler. Thus, a manager may be permitted to schedule meetings at all times, while a sales representative may be restricted to scheduling meetings in the morning.

The invention may be configured to automatically identify the scheduler. For example, the invention is readily adapted to accept a password, or to identify a permission attached to the scheduler's computer access account.

The invention may also be provided with an alarm feature. The schedule owner is notified when meetings are scheduled to begin. The schedule owner may also set an alarm for notification if a certain number of task hours has or has not been completed by a specific time. For example, the alarm will notify the schedule owner that only 10 hours of a 30 hour task have been completed by Wednesday afternoon. The schedule owner may thereupon cancel all meetings for the rest of the week to permit sufficient time to complete the task.

Standard categories may be provided for use by either schedule owner or scheduler. As an example, categories such as medical appointments, luncheons, and business trips can be assigned designated markers. These markers are then placed in the schedule as appropriate.

In one embodiment of the invention, the scheduling tool accesses the schedule frequently to minimize the effects of contention among schedulers. For example, the scheduling tool may access the schedule every 3 seconds. In such case, a scheduler is quickly notified of any intervening scheduling changes.

Accordingly, the invention should only be limited by the Claims included below.

I claim:

1. A method for scheduling and time management on a computer network, comprising the steps of:

in a scheduling tool, a schedule owner dynamically allocating a threshold amount of meetings in said schedule owner's schedule, wherein said threshold amount of meetings is the total amount of meetings or other interruptions that the schedule owner prefers during a time interval; and

a scheduler accessing said schedule owner's schedule with said scheduling tool;

wherein when said scheduler schedules a meeting with said schedule owner, said scheduling tool signals said scheduler if said threshold amount of meetings has been reached or exceeded.

2. The method of claim 1, wherein said signal is at least any one of a text, graphical display, visual display, sound, animation, video display, or voice message.

3. The method of claim 1, further comprising the step of the scheduling tool prohibiting the scheduling of a meeting in excess of said threshold.

4. The method of claim 1, further comprising the step of the scheduling tool permitting the scheduling of a meeting in excess of said threshold if predetermined schedule owner preferences are met by said meeting.

5. The method of claim **1**, further comprising the steps of:

said scheduling tool accessing schedules of a plurality of schedule owners; and

said scheduling tool comparing said schedules to locate a time at which all of said schedule owners are free;

wherein a meeting may be scheduled in said free time.

6. The method of claim **1**, further comprising the step of:

said schedule owner dynamically allocating the amount of time required to perform a task; and

the scheduling tool displaying a visual indicator showing a remaining amount of said allocated time.

7. The method of claim **1**, further comprising the step of providing at least one of a visual or audio display of said schedule.

8. The method of claim **1**, further comprising the step of the scheduling tool automatically connecting said scheduler to at least one of an email, voice mail, or computer messaging application when said threshold has been reached or exceeded.

9. A method for scheduling and time management on a computer network, comprising the steps of:

a schedule owner dynamically allocating a threshold amount of meetings in said schedule owner's schedule, wherein said threshold amount of meetings is the total

amount of meetings or other interruptions that the schedule owner prefers during a time interval;

a scheduler accessing schedules of said schedule owner with a scheduling tool; and

said scheduling tool comparing said accessed schedules to locate times at which all schedule owners are free;

wherein when said scheduler schedules a meeting during said free time with said schedule owners, said scheduling tool signals said scheduler if a selected threshold amount of meetings has been reached or exceeded.

10. The method of claim **9**, wherein said signal is at least one of a text, graphical display, visual display, sound, animation, video display, or voice message.

11. The method of claim **9**, further comprising the step of the scheduling tool prohibiting the scheduling of a meeting in excess of said threshold.

12. The method of claim **9**, further comprising the step of the scheduling tool permitting the scheduling of a meeting in excess of said threshold.

13. The method of claim **9**, further comprising the step of:

said schedule owner dynamically allocating the amount of time required to perform a task; and

the scheduling tool displaying a visual indicator showing a remaining amount of said allocated time.

14. The method of claim **9**, further comprising the step of providing at least one of a visual or audio display of said schedule.

15. The method of claim **9**, further comprising the step of the scheduling tool automatically connecting said scheduler to at least one of an email, voice mail, or computer messaging application when said threshold has been reached or exceeded.

16. A system for scheduling and time management on a computer network, comprising:

a scheduling tool for receiving a schedule owner's schedule, wherein said schedule owner may dynamically allocate a threshold amount of meetings in said schedule owner's schedule, wherein said threshold amount of meetings is the total amount of meetings or other interruptions that the schedule owner prefers during a time interval;

an interface for a scheduler to access said schedule owner's schedule with said scheduling tool; and

a signaling module in said scheduling tool for signaling said scheduler if said threshold amount of meetings has been reached or exceeded when said scheduler schedules a meeting with said schedule owner.

17. The system of claim **16**, wherein said signalling module signal is at least one of a text, graphical display, visual display, sound, animation, video display, or voice message.

18. The system of claim **16**, said scheduling tool further comprising a scheduling module for prohibiting the scheduling of a meeting in excess of said threshold.

19. The system of claim **16**, said scheduling tool further comprising a group scheduling module for accessing schedules of a plurality of schedule owners and for comparing said schedules to locate a time at which all of said schedule owners are free, wherein a meeting may be scheduled in said free time.

20. The system of claim **16**, further comprising a connecting module for automatically connecting said scheduler to at least one of an email, voice mail, or computer messaging application when said threshold has been reached or exceeded.

21. The system of claim **16**, further comprising:

a task module for dynamically allocating the amount of time required to perform an assignment; and

a visual indicator for displaying a remaining amount of said allocated time.

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